**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs 3-14

**Networks are classified according to below and we will study the following:**

1. **Network Categories: LAN, WAN**
2. **Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**
3. **Network communication standards**
4. **Network hardware and software**
5. **Transmission media**
6. **Network security**

**What is a network?**

1. Describe the role of a network.

The key role of a network is to share resources and knowledge whether it be locally or world wide. They may operate within a organisation, business, education department or on a personal scale.

1. What is groupware software? Provide an example.

Groupware software is software that allows uses to work as a group in the use or development of content. One such example is Dreamweaver that allows users to share their screen.

1. Describe the nature of social networking sites.

Social networking sites such as facebook, main purpose is to allow users to exchange information,

1. What is meant by real time?

Real time is the term given when there is no delay between when the data sent and received or likewise is created and viewed.

**Advantages of networks**

Elaborate under each of the following advantages of networks:

1. Resource sharing
   1. Internet connection

Some advantages of resources sharing an internet connection include that there is a definite cost efficiency when having multiple users connect to one central connection rather than providing everyone with their own connection.

* 1. Printing

Printing has some clear benefits when set-up in a networked infrastructure. One such includes lowered running cost due to the an underused excess of printers being made redundant. This hence lowers the running costs and start-up costs as well as freeing up some space in the building. Likewise it improves efficiency as the often called ‘sneaker net’ becomes unneeded hence people can save time by printing straight from their own machines.

* 1. Software

Software also benefits from a network infrastructure being in place, this is due to it enabling businesses to purchase the often cheaper site licence for the required users rather than buying one for each user. Likewise it allows for close control of the amount of users running the program and what is installed on the different computer in an effort to prevent a breach of the license agreement.

* 1. Other resources including network-attached storage (NAS) servers

Additionally other resources can be another source of benefits for networking a workplace, home or other as items such as documents can be made available from any computer rather than on just one, likewise many devices can be shared and used via many computers.

* + 1. Define a NAS server

A NAS (Network Attached Storage) server is a file based data storage method that allows for networked computers to access through their connection. This method of data storage and retrieval is often used by organisations or by modern game consoles.

1. Remote Services
   1. Describe how a B2B network operates.

A B2B (Business to business) network operates by often utilising an extranet to allow other business to view, order and carry out other services linked to their products.

* 1. What is an extranet?

An extranet is a part of a company’s private network extended to users outside of the company usually through the internet by using internet protocols and the public telephone system.

* 1. What are the advantages of a B2B situation?

There are various benefits of a B2B situation though some of the most common include; that it can help improve accuracy of the data processing due to the business personally filling out the data and cross checking. It can also overall reduce costs due to less staff, errors and central processing.

* 1. Describe the nature of EFTPOS.

EFTPOS (Electronic Funds Transfer Point Of Sale) is used for purchasing items through direct payment from your account to the businesses at the point of sale. This is achievable through each EFTPOS terminal being linked back to bank server for which the transaction is going through.

1. Data and information sharing in organisations
   1. Outline how data and information sharing occurs through networks and how this is an advantage.

Data and information sharing occurs through networks are carried out by connecting to any one of possible connected storage devices on the network, these may be NAS’s, Computers or other servers such as internet servers. The main advantage that becomes evident includes that files are accessible whenever needed on any connected device given sufficient credentials are given with proper authorisation. This also enables information to remain current and hence accurate preventing errors to occur as frequently.

* 1. What is meant by the process of synchronising data?

The process of synchronising data is when all users ensure that they have access to the same data set as everyone else and likewise the most recent version available. This ensures that decisions made are accurate and not based on out of date content

* 1. How does this prevent data duplication?

This prevents data duplication as it ensures that each user doesn’t make changes to a document creating an alternate version.

1. Facilitating communications
   1. How does networks facilitate communications?

Networks facilitate communications by allowing access to resources such as email, IM’s, chat rooms ect while making it much faster and simplier for the user when compared to postal services.

Types of networks, p 8

**1 Network categories**

1. Local Area Network, (LAN)
   1. Describe the nature of a LAN.

A lan (local Area Network) is a network based within a small geographical area such as a room or building and is generally transmitted via CAT5 cabling though a WLAN (Wireless LAN) is increasingly popular.

* 1. How has the advent of wireless technology changed the nature of the definition of a LAN?

The advent of wireless technology has changed the definition of LAN as it now allows devices outside of the confines of the building to be able to form a part of the LAN. Hence changing the part that defines a LAN as computers joined by one cable type.

* 1. What is a Node?

A Node in simplest form is referred to as a connection point whether it be a computer or some other device to the network.

* 1. How are LANS typically connected?

LANs are typically connected by one set of cables or a small series of connected wireless access points.

* 1. Describe a wireless LAN.

A wireless LAN utilises radio waves, satellite communications, microwave or infra-red media to transmit data between nodes. Though wireless connection is used to connect the devices a cable is often linked to the wireless access point to improve speed.

1. Wide area network, (WAN)
   1. Describe the nature of a WAN including the transmission media.

WAN’s are defined as a network where communications are carried by a medium owned by someone not part of the organisation whose data is being transmitted. bThere are categories of a WAN, these are; a MAN (Metropolitan Area network) which covers a single city, a state-wide network, a National Area Network or lastly a worldwide network such as the internetb. They are often transmitted by telephone lines, satellites, fibre-optical cable and microwave.

* 1. List the different categories of WANs

A: Stated above between the yellow highlights

1. **Network architecture**
2. What is meant by network architecture?

Network architecture is refered to as the design of a computer network. It includes the ways in which the computers, devices and transmission media are connected. 3 types include client server, peer to peer and internet peer to peer.

Under each of the following three categories of network architecture answer the questions:

1. **Client-Server network**
   1. Describe the nature of this type of network.

Client server networks are one of the most common to be implemented with it working by the client machine requesting data or files with the server sharing and sending the data to its clients on the network who asks for it (given authorisation for access).

* 1. What is the role of a client?

The clients role involves being a point of which data can be accessed from the server while the client can only send data to the server instead of other clients.

* 1. How does a server differ from an ordinary desktop computer?

A server differs from an ordinary desktop computer due to a few key reasons. Firstly a server must be able to handle tasks a lot more quickly than its desktop counterpart while additionally their requirement to deliver material quick and multitask through different software also raises the price a bit. Also a server has multiple or better NICs (Network Interface cards)

* 1. Explain what is meant by multi-tasking?

Multitasking is the ability for the machine to process the instructions from more than one program at one time.

* 1. Describe the nature of each of the following types of servers:
     1. File server

File servers act to store files in one central location that may be used on more than one computer at different times for use on clients’ computers when needed.

* + 1. Print server

Print servers are used to accept the print jobs sent by clients and withhold it till the printer is ready to receive the job. This allows for the workstation to remain operatable till the job is processed.

* + 1. Database server

A database server holds databases and allows them to be used by many users while also acting to prevent multiple openings of a record while it is open.

* + 1. Web server

A web server are connected to the internet to serve webpages to viewers on request. The numerous files and images that the server holds are in read only format to allow many users to open copies at one time.

* + 1. Domain name server

The domain name server (DNS) translates domain names into IP addresses to load. Computers on the network request the ip address from DNS’s to locate the required website or mail server. Should the DNS be internal then it provides the names of the machines on the internet and the number of the nodes that it corresponds to.

* + 1. Proxy server

A proxy server keeps a copy of all recently accessed webpages and files so that should it be requested again (and hasn’t been changed) it doesn’t have to go any higher to get the address and hence instead just gets it from the proxy

* + 1. Backup server

A backup server acts as a fast back up machine for other machines on the network.

* + 1. DHCP servers

DHCP (Dynamic Host Configuration Protocol) servers act to hand out the node number to each device.

* + 1. Active directory domain controller server

Active directory domain controller servers run active directory domain services (AD DS) which is used for storing directory data and manages communications between users and the domains, including user login processes, authentication and directory searches.

* + 1. Virtual server

Are as the name suggests a virtual copy of one rather than physical, this process it used to partition a single server so that they can each run their own OS, reboot individually ect.

1. **Peer-to-peer network**
   1. Describe the nature of this network.

In a peer-to-peer network all devices are able and allowed to share folders and resources. Though you can sometimes enable an authentication process on some folders

* 1. What are the limitations of this type of network?

some key limitations that can arise on this type of network include; locating the file you are looking for, speed of the computer when multiple users are trying to access various files.

* 1. How does a simple home network operate?

A simple home network operates by each device having both the OS and application software loaded with all the connected peripheral devices being shared between all the machines. This works best for home networks as it keeps duplicates to the minimal as a user can store a file on one device and access from any connected.

1. **Internet peer-to-peer network**
   1. Describe the nature of this network.

Internet P2P networks work much the same as a normal P2P with the exception that it allows connections over the internet. They thus copy from one hard disk to their own given that the computer is enables file sharing and is online at the time. BitTorrent is one such example of a internet P2P.

* 1. How does a user set up for this type of network?

A user may setup this type of network by carrying out various tasks such as install OS and application, allow file sharing (and allowing the program through your firewall) and connecting to the internet.

* 1. What are the risks associated with this type of network?

Through the use of internet P2P’s you expose your computer to numerous risks and security violations including malware.

* 1. What is BitTorrent?

bitTorrent is a version of internet P2P that allows users to download very large media files from peoples computers, this method can often traverse along the fine line of immoral to illegal and can at best be risky. It does however have methods in place for reducing the strain on your computer by splitting the download between multiple users.

* 1. Complete the Think about IT, 1.5 activity on pg 13.

Legal music download sites will make a low dent in the users of internet P2P site however there will always be a large enough majority of people who will use it as for the ultimate simplicity and lack of expenses associated. However internet P2P continuing is likely to result in a better price for the user on legal sites as they need to remain competitive in the market.

Music downloading is gaining popularity over cd’s as it has become a compact and portable method of listening to your music, compared to cd’s that require a specific player, can get damaged and take up a fair amount of room when stored, downloadable content can quite literally be played on just about anything within reason, with likewise any number of it playable at any one time.

Kazaa has become a legal music subscription site through its reinvention caused by the law suits filed against it creating the need. As part of its reinvention it has become a paid monthy service for unlimited downloads, likewise it also introduced methods to combat piracy from its service.

1. **Intranets**
   1. Define an intranet.

A intranet is an internal, secured environment that has a similar look and feel to the internet that however operates as a LAN. Its commonly used to provide easy and fast information to employees in a secured method to prevent public viewing.

* 1. List the benefits of an intranet.

Some main benefits of an intranet include;

* Access to information in a controlled manner
* Communications within the organisation; for example, news, notices organisational style sheets, maps of building locations, guidelines, policies and telephone numbers can be published on the intranet
* Messages that log hardware and software problems with technological support personnel
* Contacts of who to approach for specific issues or problems
* Bi-directional mechanisms, for example online forms and document reviews
* Training through the publication of online user guides and computer-based training programs
* Reduced costs and in a related was less ecological impact through lower paper wastage.
* Less maintenance and easier to find documents